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APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

ADDRESS TO: Assistant Commissioner of Patents
Box Patent Application
Washington, D.C. 20231

1. ☒ Fee Transmittal Form
(Submit an original, and a duplicate for fee processing)
2. ☒ Specification Total pages [16]
(preferred arrangement set forth below)
 - Descriptive title of the invention
 - Cross references to Related Applications
 - Statement Regarding Fed sponsored R&D
 - Reference to Microfiche Appendix
 - Background of the Invention
 - Brief Summary of the Invention
 - Brief Description of the Drawings
 - Detailed Description
 - Claims
 - Abstract of the Disclosure
3. ☒ Drawing(s) (35 USC 113) (Total Sheets) [9]
4. ☒ Oath or Declaration (Total Pages) [3]
 - a. ☐ Newly executed (original or copy)
 - b. ☒ Copy from a prior application
(37 CFR 1.63(d))
(for continuation/divisional with Box 17 completed)
[Note Box 5 below]
5. ☐ **DELETION OF INVENTOR(S)**
Signed statement attached deleting
inventor(s) named in the prior application,
see 37 CFR 1.63(d)(2) and 1.33(b)
6. ☒ Incorporation by Reference (useable if Box 4b is
checked) The entire disclosure of the prior
application, from which a copy of the oath or
declaration is supplied under Box 4b, is
considered as being part of the disclosure of
the accompanying application and is hereby
incorporated by reference therein.

6. ☐ Microfiche Computer Program (Appendix)
7. Nucleotide and/or Amino Acid Sequence Submission
(if applicable, all necessary)
 - a. ☐ Computer Readable Copy
 - b. ☐ Paper Copy (identical to computer copy)
 - c. ☐ Statement verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

8. ☐ Assignment Papers (cover sheet & document(s))
9. ☐ 37 CFR 3.73(b) Statement
(when there is an assignee)
10. ☒ Power of Attorney
11. ☐ English Translation Document (if applicable)
12. ☐ Information Disclosure Statement /PTO 1449
13. ☐ Copies of IDS Citations
14. ☒ Preliminary Amendment
15. ☒ Return Receipt Postcard (MPEP 503)
(Should be specifically itemized)
16. ☐ Small Entity Statement(s)
17. ☐ Statement Filed in prior application,
Status still proper and desired
18. ☐ Certified Copy of Priority Document(s).
(if foreign priority is claimed)
19. ☐ Other:

17. If a CONTINUING APPLICATION, check appropriate box and supply the requisite information:

☐ Continuation ☒ Divisional ☐ Continuation-in-part (CIP) of prior application No.: 08/728,359

18. CORRESPONDENCE ADDRESS

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1803-124A
VMD:cjk

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of)
Takashi MURATA)
Serial No.)
Filed: (Concurrently Herewith)) March 28, 2000
For: DIGITAL RADIO TELEPHONE)
FOR A DIGITAL MOBILE)
RADIO COMMUNICATION)
SYSTEM)

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Please amend the above-identified patent application, prior to examination, as follows.

In the Specification:

Page 1, after the title, please insert the following:

--CROSS REFERENCE TO RELATED APPLICATION

This application is a division of application Serial No. 08/728,359, filed October 9, 1996--.

Page 1, line 22, delete "including a" and substitute --containing--;

line 26, after "radio" (first occurrence) insert --communication--, and delete "including" and substitute

line 9, after "In" substitute --the--; and after
"case" insert --where--;

line 10, after "is" insert --fully--;

line 12, after "408," insert --the--;

line 15, after "409," insert --the--;

line 17, delete "thereafter," and substitute
--and--; and after "is" insert --then--;

line 25, after "the" (second occurrence) insert
--recorded--; and delete "number" and substitute --numbers--;

line 27, delete "so far".

Page 11, line 1, delete "so far";

line 2, delete "a warning" and substitute --an
indicating--; and after "inform" insert --the user--;

line 3, delete "a warning" and substitute --an--;

line 4, after "13" insert --that no telephone
number information is recorded--; after "In" insert --the--; and
delete "the" (third occurrence) and substitute --where--;

line 6, delete "an" and substitute --a recorded--.

In the Abstract of the Disclosure:

Line 1, delete "of the present invention".

REMARKS

The present amendment is made to add reference to the parent application and to add specification corrections which were made to the parent application. No new matter is added by this amendment and, accordingly, entry thereof is respectfully requested.

Respectfully submitted,

ROTHWELL, FIGG, ERNST & KURZ, p.c.

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DIGITAL RADIO TELEPHONE
FOR A DIGITAL MOBILE RADIO COMMUNICATION SYSTEM

BACKGROUND OF THE INVENTION

5 Field of the Invention

10 The invention relates to a digital radio telephone used in a digital mobile radio communication system such as a land mobile / portable phone system and a PHS (Personal Handyphone System) adopting a digital telephone system for example. The invention particularly relates to a digital radio telephone having a function of storing a mate telephone number (hereinafter, referred to as "incoming telephone number") and a function of calling the stored phone number (hereinafter, referred to as "incoming redialing function").

15 Description of the prior art

20 FIG. 11 shows a system configuration of an analog radio telephone having a conventional incoming redialing function disclosed in a laid-open Japanese patent publication No. 5-14274. This type of conventional telephone receives mate telephone number information of an incoming call together with an analog audio signal via a radio channel using a communication channel in a form of a DTMF (Dual Tone Multi Frequency) signal where a plurality of frequency signals are superposed, and then, stores the telephone number information in a memory.

25 An operation of the incoming redialing function of the analog radio telephone is explained below. First, a radio signal including a control information received via an antenna 6 using a control channel is demodulated by a radio portion 5 and outputted as a control signal which is an analog signal in a base band. Control information in the demodulated control signal is decoded by a decoder 15 and is processed by a microcomputer 10 to establish the radio channel. Then, a radio signal including the telephone number information received via the antenna 6 using the communication

channel is demodulated by the radio portion 5 and outputted as the DTMF signal which is the analog signal in the base band. The telephone number information in the demodulated DTMF signal is detected, judged, and encoded by a DTMF receiver 16. Then, the output signal from the DTMF signal is processed by the microcomputer 10 and stored in a memory 12. On the other hand, in case of calling by redialing, the telephone number information stored in advance in the memory 12 by the microcomputer 10 is read out, encoded by an encoder 17, modulated by the radio portion 5, then, transmitted from the antenna 6 as a radio signal.

Since the incoming redialing function in the conventional analog radio telephone constructed as explained above requires the DTMF receiver for detecting the telephone number information in addition to the construction for operating the telephone function itself, there is a problem that the conventional analog radio telephone construction is complicated. Also, since the conventional analog radio telephone redials using the telephone number information stored only in the memory, it is difficult to provide an incoming redialing function having high-performance or multifunction in consideration of user service.

It is an object of the present invention to provide a digital radio telephone having a high-performance incoming redialing function by maximally using the digital processing ability naturally included in a digital radio telephone.

SUMMARY OF THE INVENTION

According to one aspect of the invention, a digital radio telephone comprises a radio portion for receiving a radio signal modulated by an encoded digital signal including control information, for demodulating and outputting the encoded digital signal; a control signal processing portion for decoding the demodulated encoded digital signal to obtain the control information; a telephone number information

detecting means for detecting whether the decoded control information includes mate
telephone number information; a memory for storing the telephone number
information; a time information management means for specifying an incoming time of
the telephone number information to output a time information; and a memory
5 management means for recording the telephone number information corresponding to
the time information into the memory.

According to another aspect of the invention, a digital radio telephone used for
an external line and an extension line further comprises an extension / external line
judging means for judging whether the telephone number information is from the
10 extension or from the external line; an external line information addition means for
adding an external line calling information to the telephone number information
according to a judging result to output as new telephone number information.

Preferably, the memory management means in the digital radio telephone
records a predetermined number of telephone number information in the memory
15 starting with telephone number information received most recently.

According to further aspect of the invention, a digital radio telephone further
comprises an operating portion for supplying an operating signal, and a display
portion for displaying various information during operation, wherein, the memory
comprises a first memory portion for storing the telephone number information
20 included in the control information and a second memory portion for registering other
telephone numbers information inputted from the operating portion corresponding
identification information to the telephone numbers; and the operating portion instructs
the display portion to display the telephone number information recorded in the first
memory portion together with the corresponding identification information recorded in
25 the second memory portion.

According to further aspect of the invention, a digital radio telephone further
comprises an operating portion for supplying an operating signal, a display portion for

displaying various information during operation, wherein, the memory comprises a first memory portion for storing the telephone number information included in the control information and a second memory portion for registering other telephone numbers information inputted from the operating portion corresponding identification information to the telephone numbers; and the operating portion instructs the display portion to display the telephone number information recorded in the first memory portion together with the corresponding identification information recorded in the second memory portion.

According to further aspect of the invention, a digital radio telephone further comprises an operating portion for supplying an operating signal, a display portion for displaying various information during operation, wherein, the operating portion instructs the display portion to display the telephone number information one after another in a circulative way starting with telephone number information received most recently.

Preferably, the operating portion in the digital radio telephone instructs to make a calling process according to the telephone number information when predetermined telephone number information recorded in the memory is displayed on the display portion.

Preferably, the memory in the digital radio telephone comprises a first memory portion for storing the telephone number information included in the control information and a second memory portion for registering other telephone numbers information inputted from the operating portion corresponding identification information to the telephone numbers; and the operating portion instructs the second memory portion to register the predetermined telephone number information when the predetermined telephone number information recorded in the first memory portion is displayed on the display portion.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a functional block diagram showing a system configuration of a digital radio telephone of an embodiment of the present invention.

5 FIG. 2 is a functional block diagram related to a recording process of an incoming telephone number of the embodiment of the present invention shown in FIG. 1.

FIG. 3 is a block diagram related to a detailed process of a memory management means of the embodiment of the present invention shown in FIG. 2.

10 FIG. 4 is a flow chart related to the recording process of the incoming telephone number of the present invention.

FIG. 5 is a diagram to explain a storage configuration of the incoming telephone numbers of the present invention.

15 FIG. 6 is a flow chart related to a display process of the incoming telephone number of the present invention.

FIG. 7 shows a displaying order of the incoming telephone numbers in the present invention.

FIG. 8 is a flow chart related to an incoming redialing process of the incoming telephone number of the present invention.

20 FIG. 9 is a flow chart related to a memory dial registering process of the incoming telephone number of the present invention.

FIG. 10 is a diagram to explain a storage construction of the telephone numbers in the memory dial registering memory of the present invention.

25 FIG. 11 is a block diagram showing a system configuration of a conventional digital radio telephone.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Embodiment 1.

The present invention is concretely explained focusing on a digital radio telephone compatible to both a private (extension) line and a public (external) line.

FIG. 1 shows a system configuration of the digital radio telephone of an embodiment of the present invention. FIG. 1 comprises a microphone 1 which is used by a user of the digital radio telephone to input audio information such as speech as an analog audio signal, an A/D converter 2 for converting the inputted analog audio signal into a digital audio signal, a voice encoding / decoding portion 3 for encoding the digital audio signal outputted from the A/D converter 2 using a data compression encoding system such as a VSELP (Vector Sum Excited Linear Predictive Coding) system to obtain an encoded digital signal, and decoding the encoded digital signal in a reverse process to the encoding to obtain a digital audio signal, a switch 4 for selecting any one of the encoded digital signal from the voice encoding / decoding portion 3 or an encoded digital signal from a control signal processing portion 9 mentioned later, a radio portion 5 having a transmission modulating function for converting the encoded digital signal from the switch 4 into a radio signal transmitted by an antenna 6 and a reception demodulating function for converting the radio signal received by the antenna 6 into an encoded digital signal, a D/A converter 7 for converting the digital audio signal decoded by the voice encoding / decoding portion 3 into an analog audio signal, a speaker 8 for outputting the audio information as the analog audio signal, a control signal processing portion 9 for decoding a control information included in the encoded digital signal from the radio portion 5, and for encoding telephone number information stored in a memory 12 mentioned later, and outputting the telephone number information to the switch 4 as an encoded digital signal, a microcomputer 10 for recording the telephone number information included in the control information - from the control signal processing portion 9 in the memory 12 according to the time when the information is received and for processing the telephone number information

stored in the memory 12 in order to display it on the display portion 13 mentioned later by an operating portion 11, an operating portion 11 for reading the telephone number information out of the memory 12 for example and for inputting an operating information such as carrying out calling as an operating signal, a memory 12 for storing the telephone number information processed by the microcomputer 10 as an incoming record information, a display portion 13 for displaying a message in response to the operating information and various operations, and a control timing generating circuit 14 for controlling switching timing of the switch 4. FIG. 1 also comprises a voice processing portion 100 which comprises the A/D converter 2, the voice encoding / decoding portion 3, and the D/A converter 7.

FIG. 2 is a functional block diagram especially relates to a recording process of the incoming telephone number conducted in the microcomputer 10 in the system configuration of the digital radio telephone shown in FIG. 1. FIG. 2 comprises a telephone number information detecting means 40 for detecting whether the telephone number information is included in the control information from the control signal processing portion 9, a time information management means 50 for specifying a receiving time of the control information included the telephone number information according to the time from a clock portion (not shown) provided in the digital radio telephone and for outputting the time information, an extension / external line judging means 70 for identifying and judging whether the call is from the extension or from the external line in case the telephone number information exists by detecting extension / external line identification information included in the control information for example, an external line information addition means 80 for extracting the telephone number information from the control information and for outputting the telephone number information in case the call is from the extension line, while for extracting the telephone number information from the control information, and adding external line calling information to the telephone number information, then, outputting the

telephone number information as new telephone number information in case the call is from the external line, and a memory management means 60 for recording the telephone number information from the external line information addition means in the memory 12 as incoming record information in correspondence to the time information from the time information management means 50.

FIG. 3 is a functional block diagram especially relates to a detailed process conducted in the memory management means 60 shown in FIG. 1 which is the functional block diagram regarding the incoming telephone number process conducted in the microcomputer 10. In FIG. 3, a telephone number information comparison means 67 compares the telephone number information from the external line information addition means 80 with the telephone number precedingly recorded in the memory 12 and outputs whether these telephone number information are identical to each other. The operating portion 11 gives instructions to compare or not with the telephone number information. A vacant memory judging means 61 judges whether a vacant area exists in the memory 12 to store the telephone number information of a new incoming call according to an output of the telephone number information comparison means 67 ("record all" without comparison or "no identical information" as a result of comparison). A rerecording means 62 deletes unnecessary information (the oldest information or a plurality of identical information) of the incoming record information recorded in the memory 12 according to a judging result of the vacant memory judging means 61 ("no vacancy") or the output of the telephone number information comparison means 67 ("identical information" as a result of comparison) and keeps vacant areas to newly rerecord the remaining incoming record information. A recording means 63 records the telephone number information in a desired area in the memory 12 in correspondence to time information as an incoming record information according to "vacant" as a judging result of the vacant memory judging means 61 or "vacant" as a judging result of the re-recording means 62.

FIG. 4 is a flow chart showing an operation of the recording process of the incoming telephone number. The operation of the present embodiment shown in FIG. 2 is explained using FIGS. 3 and 4.

First, in a step 401, the telephone number information detecting means 40
5 detects whether the telephone number information is included in the control
information from the control signal processing portion 9. The process is completed in
case the telephone number information is not included. In case telephone number
information is included, the extension / external line judging means 70 identifies and
judges whether the telephone is in the extension or in the external line in a next step
10 402. In case the call is in the external line, in a next step 403, the external line
information addition means 80 adds external line identifying information ("0" as the
external line calling number, for example) to the telephone number information in the
control information. In case the call is in the extension, the external line information
addition means 80 extracts the telephone number information from the control
15 information and outputs the telephone number information. Then, in a step 404, the
time information management means 50 specifies the time when the telephone number
information is received. In a next step 405, the operating portion 11 instructs the
telephone number information comparison means 67 to process a plurality of identical
incoming telephone numbers received so far. In case of recording all the identical
20 incoming telephone numbers, the operation goes to a step 406. In case of recording
only the latest incoming telephone number out of the identical incoming telephone
numbers, the operation goes to a step 410. In the step 410, the telephone number
information comparison means 67 compares the incoming telephone number
information recorded so far in an incoming recording memory 121 corresponds to a
25 first memory portion in the memory 12 with the latest incoming telephone number
information. In case the incoming telephone number information are not identical to
the registered telephone number information, the operation goes to the step 406. On

the other hand, in case incoming telephone number information is identical to the registered telephone number information, the operation goes to a step 411. In the step 411, the recording means 63 deletes the incoming telephone number information recorded so far in the incoming recording memory 121 and goes to a step 408. In the

5 step 406, the vacant memory judging means 61 judges whether the area for new incoming telephone number information can be used in the incoming recording memory 121. In case the incoming recording memory 121 is not occupied, the incoming telephone number information is recorded in the incoming recording memory 121 together with the time information. In case the incoming recording

10 memory 121 is occupied, the operation goes to a next step 407, where the telephone number information with the oldest time information is deleted from the incoming recording memory 121. In the next step 408, second oldest telephone number information is incremented and recorded into the location in the incoming recording memory 121 where the oldest time information is deleted. This operation is repeated

15 continuously. In a next step 409, latest incoming telephone number information is finally recorded together with the time information into a location in the vacant incoming recording memory 121, thereafter, the operation is completed. FIG. 5 shows a memory construction of the incoming telephone numbers and their incoming times in the incoming recording memory 121. As shown in FIG. 5, the respective

20 incoming telephone number is stored in each address in combination with its incoming time in the incoming recording memory 121.

FIG. 6 is a flow chart showing an operation of display processes of the incoming telephone number recorded in the incoming recording memory 121. The operation of the display processes is explained below using FIGS. 3 and 6. First, in a

25 step 601, the operating portion 11 instructs to display the incoming telephone number. In a next step 602, a memory record judging means 66 judges whether incoming telephone number information is recorded so far into the incoming recording memory

121. In case no incoming telephone number information is recorded so far, in a step 603, a warning sound is given from the speaker 8 to inform that no incoming telephone number information is recorded and also a warning indication is displayed on the display portion 13, then, the display process is completed. In case the incoming telephone number information is recorded, an incoming record reading means 64 reads an incoming telephone number received most recently together with its incoming time out of the incoming recording memory 121, and in a step 604, the display portion 13 displays the telephone number and the incoming time. In a next step 605, the display process finishes according to an instruction of the operating portion 11. In case of displaying other incoming telephone numbers, in a next step 606, the operating portion 11 instructs to switch the display indication of the incoming telephone number. In response to the instruction from the operation portion 11, in a step 607, the display of an immediately preceding incoming telephone number or an immediately succeeding incoming telephone number is switched back and forth. After that, the operation returns to the step 605, then, the steps 605, 606, 607 are repeated until a desired incoming telephone number is displayed.

FIG. 7 shows a displaying order of the incoming telephone numbers when five incoming telephone numbers are recorded. According to the instructions from the operating portion 11, the displayed telephone number circulates in an increment direction or a decrement direction of the recorded incoming telephone numbers one after another. In the above mentioned display processes (steps 604, 607), only the incoming telephone number information and the incoming time recorded in the incoming recording memory 121 are displayed. In case memory dial information corresponding to the incoming telephone number information is registered in a registering memory 122 which is mentioned later, additional information (e.g. name or company name corresponding to the telephone number) in the memory dial information can be displayed as a related information at the same time in addition to the

incoming telephone number information. In this case, in steps 604 and 607, the memory dial information in the registering memory 122 is searched (searching means is not shown) using a key word of the incoming telephone number which is read out by the incoming record reading means 64. Then, if the identical telephone number with the incoming telephone number is searched in the incoming record reading means 64, the additional information corresponding to the incoming telephone number is read out from the memory dial reading means 68 and displayed on the display portion 13.

FIG. 8 is a flow chart showing an operation of an incoming redialing process using the incoming telephone number recorded in the incoming recording memory 121. The operation of the incoming redialing process is explained below using FIGS. 3 and 8. First, in a step 801, the operating portion 11 instructs the display portion 13 to display a desired incoming telephone number. The detailed processes from the start to the display indication for displaying the incoming telephone number is the same as the display processes explained using FIG. 6. Next, in a step 802, the operating portion 11 instructs to carry out the incoming redialing. Then, in a next step 803, the telephone number information read out by the incoming record reading means 64 is transmitted as control information from the radio portion 5 to the mate telephone via the control signal processing portion 9 to make a telephone call.

FIG. 9 is a flow chart showing an operation of a memory dial registering process of the incoming telephone number recorded in the incoming recording memory 121. In general, a memory dial function includes functions for registering frequently-used telephone numbers and their related additional information (names, names of companies corresponding to the telephone numbers) in advance as memory dial information, for accessing a desired telephone number or additional information, for displaying it and for making a telephone call with less operations. The registering is explained using FIG. 3. First, a mate telephone number is inputted from the operating portion 11. Then, a registering means 65 registers the telephone number

into a desired area in the registering memory 122 which is a second memory portion in the memory 12. At this time, it is possible to register the telephone number corresponding to an abbreviated title of the mate name and so on if required. FIG. 10 shows a storage construction of the mate telephone numbers and the related abbreviation of the mate names. As shown in FIG. 10, the telephone numbers are combined with the corresponding abbreviations and registered in respective addresses in the registering memory 122. An operation of the memory dial registering process of the present invention is explained below using FIGS. 3 and 9. First, in a step 901, a desired incoming telephone number is displayed on the display portion 13 according to the instructions of the operating portion 11. The detailed processes from the start to the display indication for displaying the incoming telephone number is the same as the display processes explained using FIG. 6. Then, in a step 902, the operating portion 11 instructs to register the memory dial. In a next step 903, the telephone number information read out by the incoming record reading means 64 is registered in a desired area in the registering memory 122, or the second memory portion, via the registering means 65.

What is claimed is:

1 1. A digital radio telephone comprising:
2 a radio portion for receiving a radio signal
3 modulated by an encoded digital signal including
4 control information, for demodulating and outputting
5 said encoded digital signal;
6 a control signal processing portion for decoding
7 said demodulated encoded digital signal to obtain said
8 control information;
9 a telephone number information detecting means for
10 detecting whether the decoded control information
11 includes incoming telephone number information;
12 a memory for storing said telephone number
13 information, said memory having an incoming recording
14 memory and a registering memory, with said incoming
15 recording memory storing a telephone number and a time
16 information of an incoming telephone call;
17 a time information management means for specifying
18 an incoming time of said telephone number information
19 to output said time information; and
20 a memory management means for recording said
21 telephone number information corresponding to said time
22 information into said memory, with said telephone
23 number being compared to previously stored telephone
24 numbers, and being stored in a first memory location if
25 said telephone number is not in said incoming recording
26 memory, and being deleted from an existing memory
27 location and being stored in a first memory location if
28 said telephone number is currently in said incoming
29 recording memory.

1 2. A digital radio telephone comprising:

2 a radio portion for receiving a radio signal
3 modulated by an encoded digital signal including
4 control information and incoming telephone number
5 information, for demodulating said radio signal and
6 outputting said encoded digital signal;

7 a control signal processing portion for decoding
8 said demodulated encoded digital signal to obtain said
9 control information;

10 a telephone number information detecting means for
11 detecting, before a speech path is established with an
12 incoming call apparatus, whether the decoded control
13 information includes said incoming telephone number
14 information;

15 a first memory for storing telephone number
16 information included in said control information; and

17 a second memory for storing identification
18 information corresponding to said telephone number
19 information stored in the first memory.

ABSTRACT OF THE DISCLOSURE

A digital radio telephone of the present invention comprises a radio portion for
5 receiving a radio signal modulated by an encoded digital signal including control
information, for demodulating and outputting the encoded digital signal, a control
signal processing portion for decoding the demodulated encoded digital signal to
obtain the control information, a telephone number information detecting means for
detecting whether the decoded control information includes mate telephone number
10 information, a memory for storing the telephone number information, a time
information management means for specifying an incoming time of the telephone
number information to output a time information, and a memory management means
for recording the telephone number information corresponding to the time information
15 into the memory.

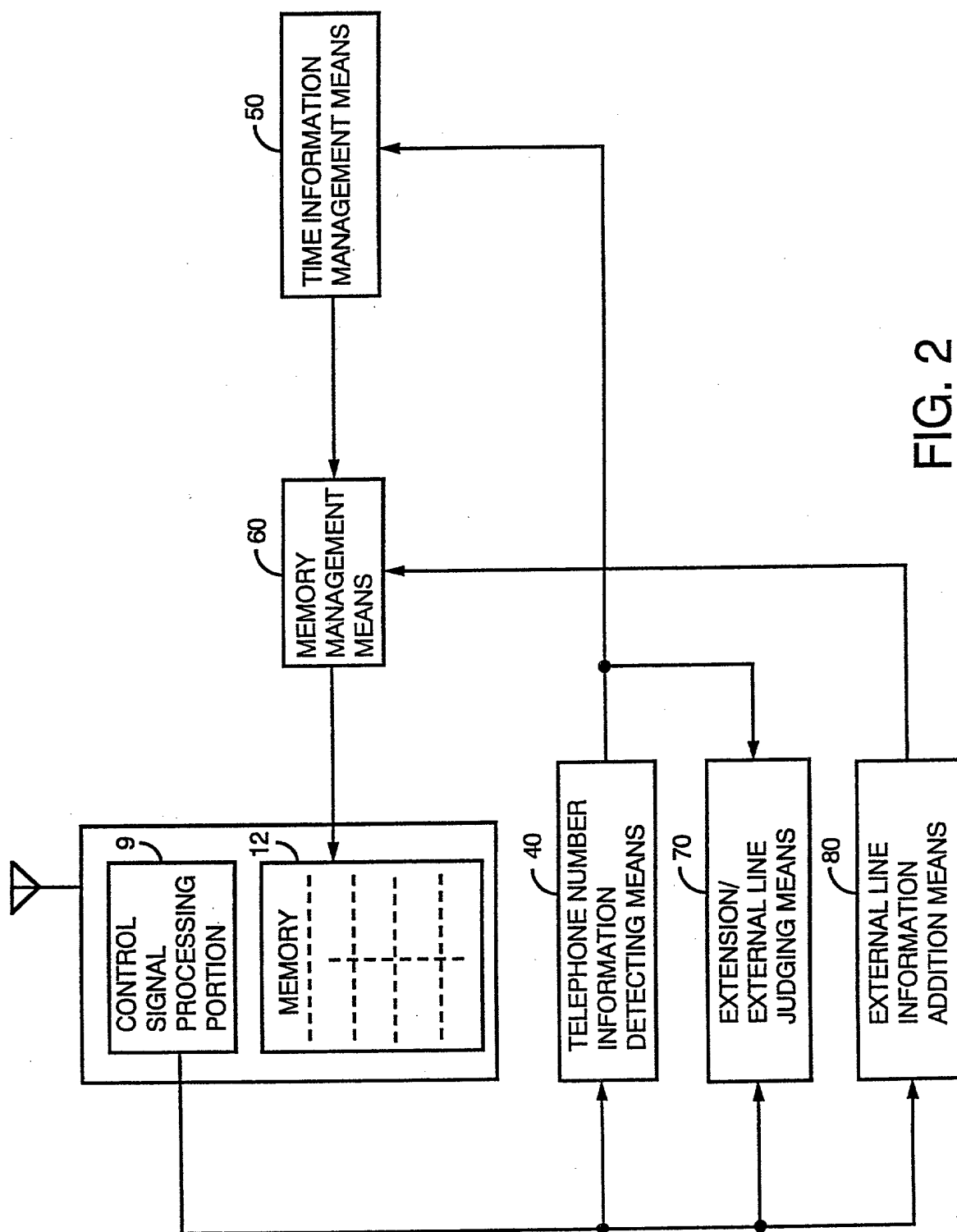


FIG. 2

121

ADDRESS 1	INCOMING TELEPHONE NUMBER 1	INCOMING TIME 1
ADDRESS 2	INCOMING TELEPHONE NUMBER 2	INCOMING TIME 2
ADDRESS 3	INCOMING TELEPHONE NUMBER 3	INCOMING TIME 3
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.

FIG. 5

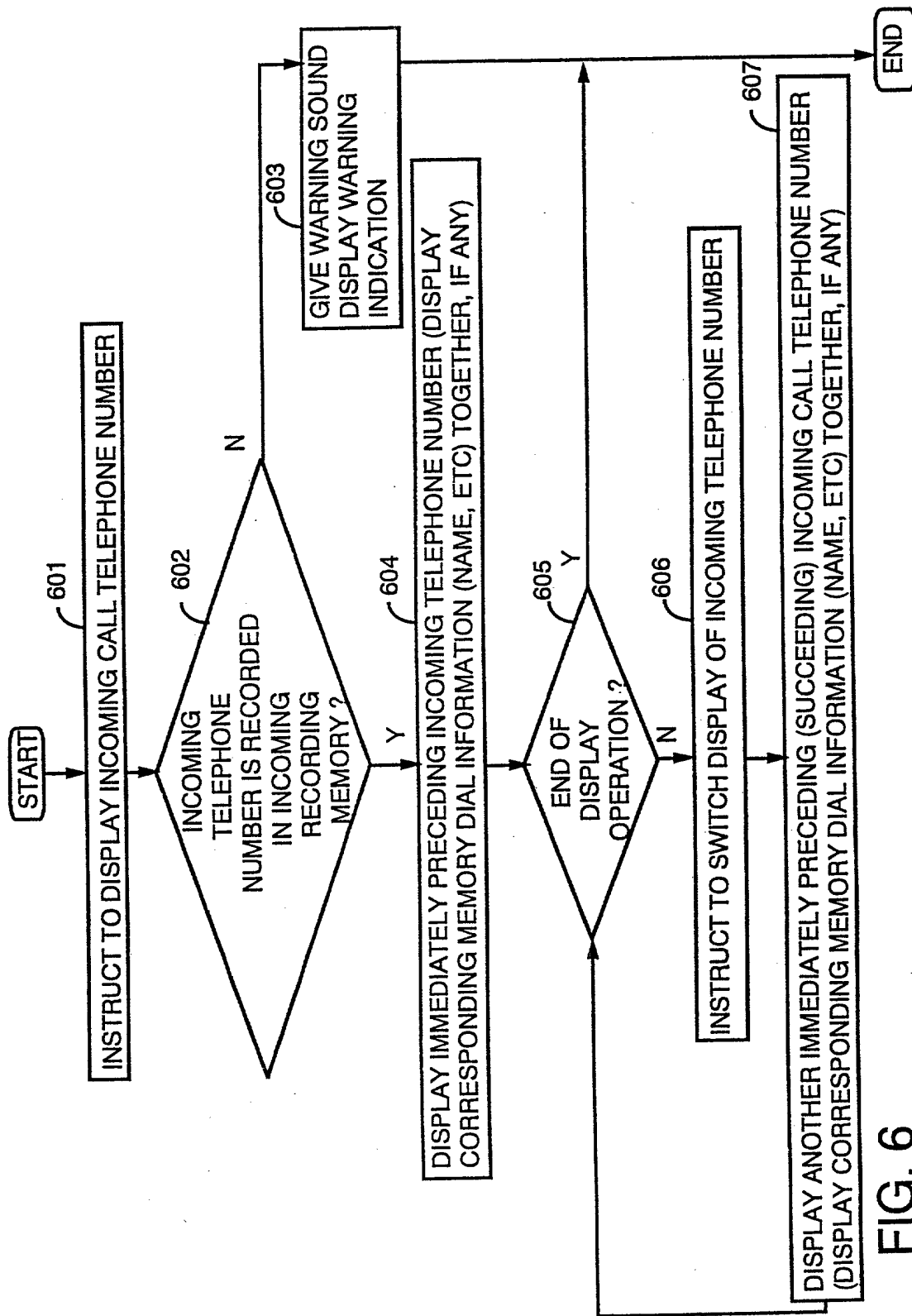


FIG. 6

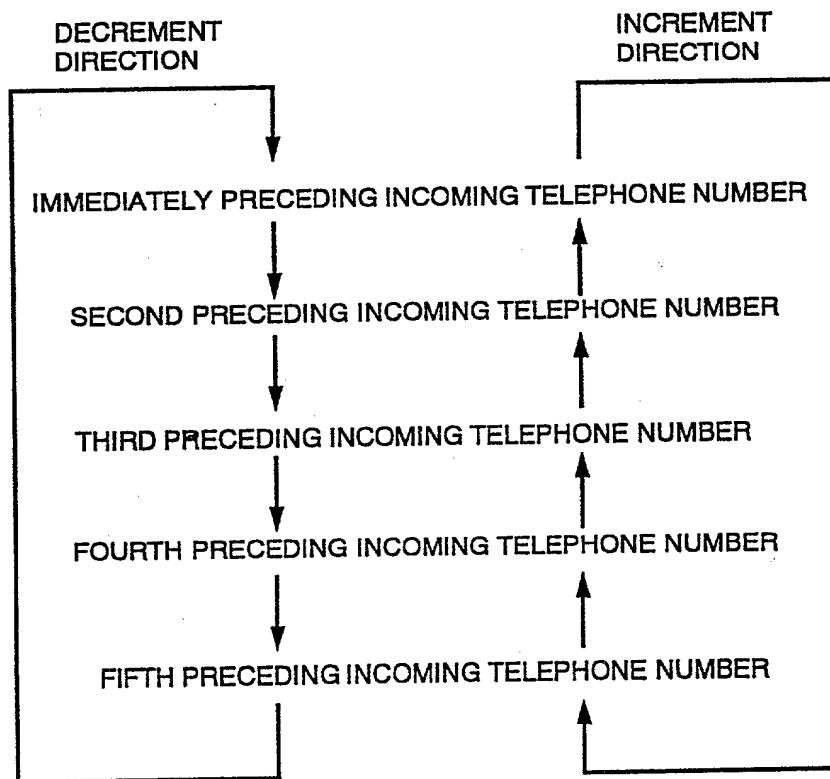


FIG. 7

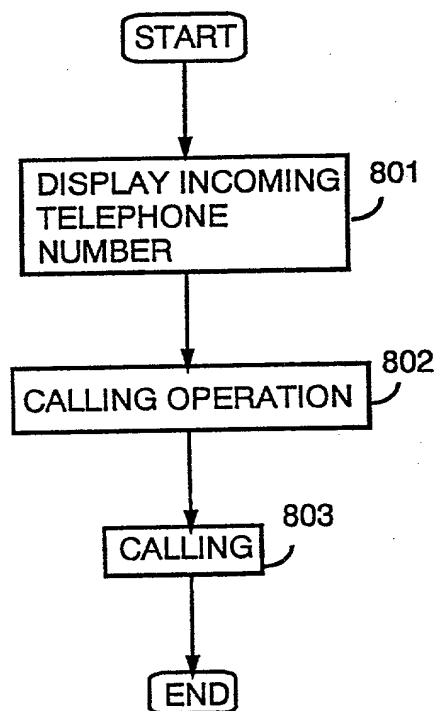


FIG. 8

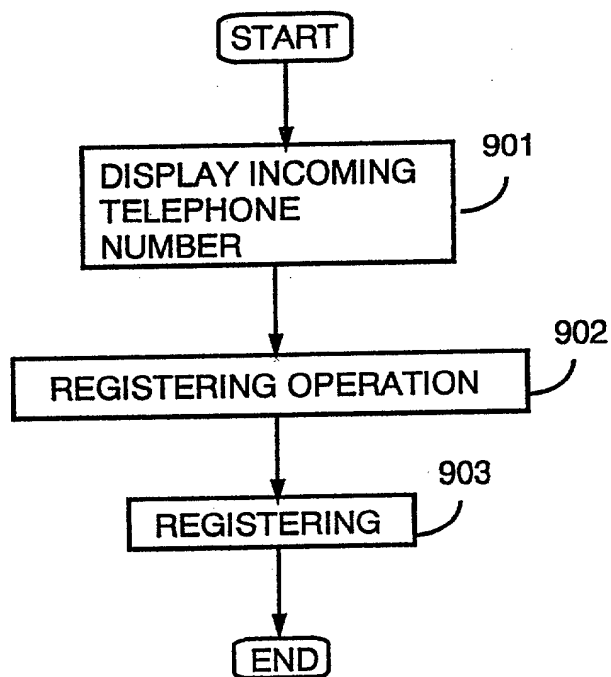
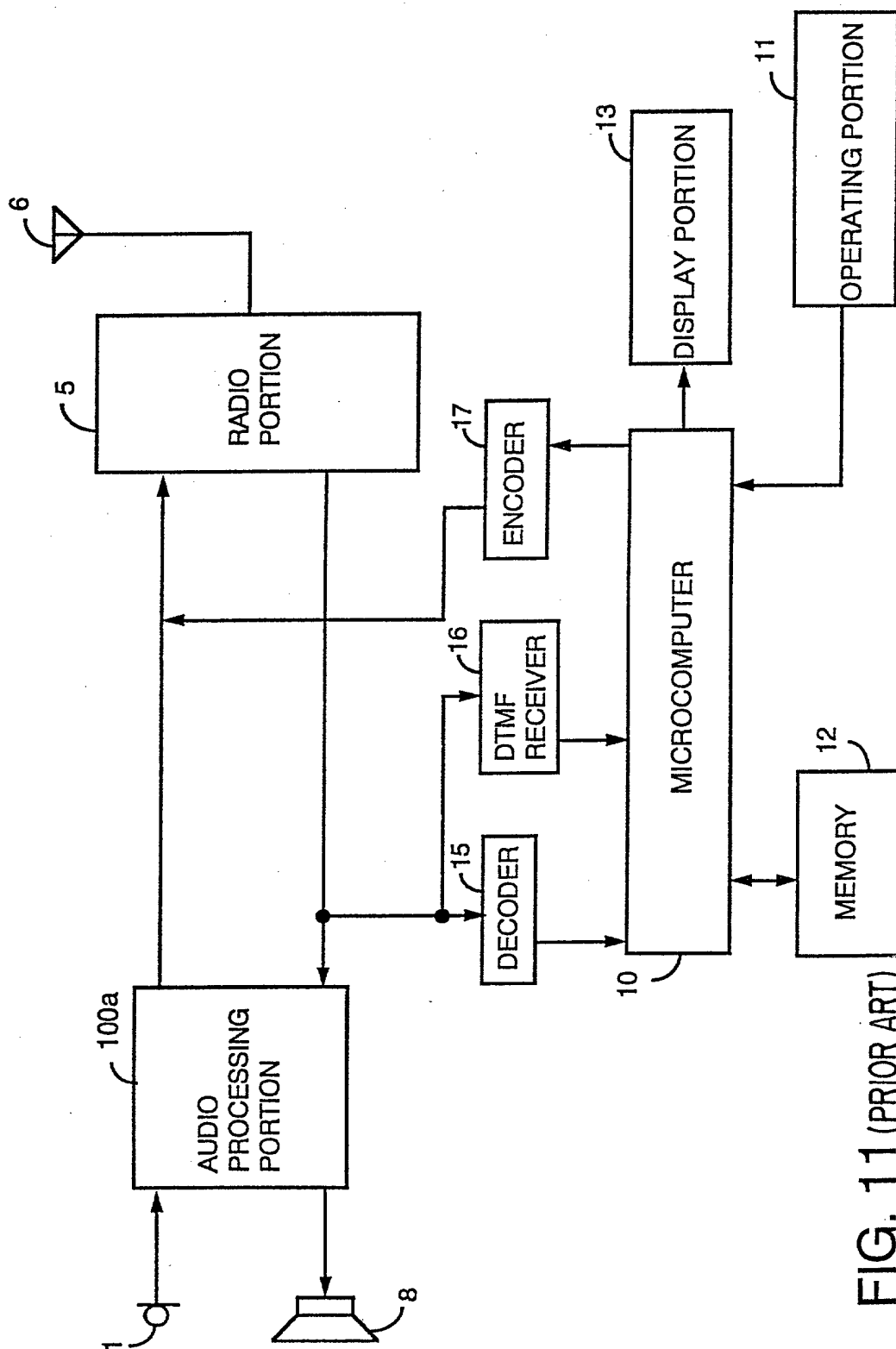
[illegible]

FIG. 9

121

ADDRESS 1	TELEPHONE NUMBER 1	ABBREVIATION 1
ADDRESS 2	TELEPHONE NUMBER 2	ABBREVIATION 2
ADDRESS 3	TELEPHONE NUMBER 3	ABBREVIATION 3
<div style="display: flex; justify-content: space-between; padding: 5px;"> <div style="width: 20%;">•</div> <div style="width: 20%;">•</div> <div style="width: 20%;">•</div> <div style="width: 20%;">•</div> <div style="width: 20%;">•</div> </div>	<div style="display: flex; justify-content: space-between; padding: 5px;"> <div style="width: 20%;">•</div> <div style="width: 20%;">•</div> <div style="width: 20%;">•</div> <div style="width: 20%;">•</div> <div style="width: 20%;">•</div> </div>	<div style="display: flex; justify-content: space-between; padding: 5px;"> <div style="width: 20%;">•</div> <div style="width: 20%;">•</div> <div style="width: 20%;">•</div> <div style="width: 20%;">•</div> <div style="width: 20%;">•</div> </div>

FIG. 10



Declaration and Power of Attorney For Patent Application

特許出願宣言書

Japanese Language Declaration

私は、下欄に氏名を記載した発明者として、以下のとおり宣言する：

私の住所、郵便の宛先および国籍は、下欄に氏名に続いて記載したとおりであり、

名称の発明に関し、請求の範囲に記載した特許を求める主題の本来の、最初にして唯一の発明者である（一人の氏名のみが下欄に記載されている場合）か、もしくは本来の、最初にして共同の発明者である（複数の氏名が下欄に記載されている場合）と信じ、

その明細書を
(該当する方に印を付す)

☐ ここに添付する。

☐ _____ 日に出願番号

第 _____ 号として提出し、

_____ 日に補正した。
(該当する場合)

私は、前記のとおり補正した請求の範囲を含む前記明細書の内容を検討し、理解したことを陳述する。

私は、連邦規則法典第37部第1章第56条(a)項に従い、本願の審査に所要の情報を開示すべき義務を有することを認める。

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

DIGITAL RADIO TELEPHONE FOR

A DIGITAL MOBILE RADIO

COMMUNICATION SYSTEM

the specification of which

(check one)

☒ is attached hereto.

☐ was filed on _____ as

Application Serial No. _____

and was amended on _____
(if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56

Japanese Language Declaration

私は、合衆国法典第35部第119条にもとづく下記の外国特許出願または発明者証出願の外国優先権利益を主張し、さらに優先権の主張に係わる基礎出願の出願日前の出願日を有する外国特許出願または発明者証出願を以下に明記する：

Prior foreign applications

先の外国出願

8-43510/96	JAPAN	29/ 2/ 1996
(Number)	(Country)	(Day/Month/Year Filed)
(番号)	(国名)	(出願の年月日)
(Number)	(Country)	(Day/Month/Year Filed)
(番号)	(国名)	(出願の年月日)
(Number)	(Country)	(Day/Month/Year Filed)
(番号)	(国名)	(出願の年月日)

Priority claimed

優先権の主張

<input checked="" type="checkbox"/>	<input type="checkbox"/>
Yes	No
あり	なし
<input type="checkbox"/>	<input type="checkbox"/>
Yes	No
あり	なし
<input type="checkbox"/>	<input type="checkbox"/>
Yes	No
あり	なし

私は、合衆国法典第35部第120条にもとづく下記の合衆国特許出願の利益を主張し、本願の請求の範囲各項に記載の主題が合衆国法典第35部第112条第1項に規定の様態で先の合衆国出願に開示されていない限度において、先の出願の出願日と本願の国内出願日またはPCT国際出願日の間に公表された連邦規則法典第37部第1章第56条(a)項に記載の所要の情報を開示すべき義務を有することを認める：

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.)
(出願番号)

(Filing Date)
(出願日)

(現況)
(特許済み、係属中、放棄済み)

(Status)
(patented, pending, abandoned)

(Application Serial No.)
(出願番号)

(Filing Date)
(出願日)

(現況)
(特許済み、係属中、放棄済み)

(Status)
(patented, pending, abandoned)

私は、ここに自己の知識にもとづいて行った陳述がすべて真実であり、自己の有する情報および信ずるところに従って行った陳述が真実であると信じ、さらに故意に虚偽の陳述等を行った場合、合衆国法典第18部第1001条により、罰金もしくは禁錮に処せられるか、またはこれらの刑が併科され、またかかる故意による虚偽の陳述が本願ないし本願に対して付与される特許の有効性を損うことがあることを認識して、以上の陳述を行ったことを宣言する。

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Japanese Language Declaration

委任状：私は、下記発明者として、以下の代理人をここに選任し、本願の手続を遂行すること並びにこれに関する一切の行為を特許商標庁に対して行うことを委任する。
(代理人氏名および登録番号を明記のこと)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)

William L. Mathis	17,337
Peter H. Smolka	15,913
Robert S. Swecker	19,885
Platon N. Mandros	22,124
Benton S. Duffett, Jr.	22,030
Joseph R. Magnone	24,239
Norman H. Stepmo	22,716
Ronald L. Grudziecki	24,970
Frederick G. Michaud, Jr.	26,003
Alan E. Kopecki	25,813
Regis E. Slutter	26,999
Samuel C. Miller, III	27,360

Ralph L. Freeland, Jr.	16,110
Robert G. Mukai	28,531
George A. Hovanec, Jr.	28,223
James A. LaBarre	28,632
E. Joseph Gess	28,510
R. Danny Huntington	27,903
Eric H. Weisblatt	30,505
James W. Peterson	26,057
Teresa Stanek Rea	30,427
Robert E. Krebs	25,885
Robert M. Schulman	31,196

William C. Rowland	30,888
T. Gene Dillahunt	25,423
Anthony W. Shaw	30,104
Patrick C. Keane	32,858
Bruce J. Boggs, Jr.	32,344
William H. Benz	25,952
Peter K. Skiff	31,917
Richard J. McGrath	29,195
Matthew L. Schneider	32,814
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Gerald F. Swiss	30,113

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Send Correspondence to:

Platon N. Mandros

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Platon N. Mandros
703/836-6620

唯一のまたは第一の発明者の氏名		Full name of sole or first inventor	
TAKASHI MURATA			
同発明者の署名	日付	Inventor's signature	Date
Takashi Murata	September 27, 1996		
住所		Residence	
TOKYO, JAPAN			
国籍		Citizenship	
JAPAN			
郵便の宛先		Post Office Address	
c/o Mitsubishi Denki Kabushiki			
Kaisha, 2-3, Marunouchi 2-chome,			
Chiyoda-ku, TOKYO 100 JAPAN			
第2の共同発明者の氏名 (該当する場合)		Full name of second joint inventor, if any	
同第2発明者の署名	日付	Second Inventor's signature	Date
住所		Residence	
国籍		Citizenship	
郵便の宛先		Post Office Address	

(第六またはそれ以降の共同発明者に対しても同様な情報および署名を提供すること。)

(Supply similar information and signature for third and subsequent joint inventors.)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of)
)
TAKASHI MURATA)
)
Serial No. 08/728,359)
)
Filed: October 9, 1996) Group Art Unit: 2614
)
For: DIGITAL RADIO TELEPHONE)
FOR A DIGITAL MOBILE)
RADIO COMMUNICATION)
SYSTEM)

POWER OF ATTORNEY
AND REVOCATION OF PREVIOUS POWERS OF ATTORNEY

Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

The undersigned, on behalf of Mitsubishi Denki Kabushiki Kaisha, assignee of the entire interest in the above-referenced patent application, hereby revokes all previous powers of attorney and appoints the following attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

G. Franklin Rothwell, Reg. No. 18,125
E. Anthony Figg, Reg. No. 27,195
Barbara G. Ernst, Reg. No. 30,377
George R. Repper, Reg. No. 31,414
Bart G. Newland, Reg. No. 31,282
Vincent M. DeLuca, Reg. No. 32,408
Joseph A. Hynds, Reg. No. 34,627
Michael G. Sullivan, Reg. No. 35,377
Jeffrey B. McIntyre, Reg. No. 36,867

Figure 1 displays the chemical structures of compounds 1 through 10, which are substituted benzene derivatives. The structures are arranged in a vertical column. Each structure shows a benzene ring with various substituents, including carboxylic acid groups, amine groups, and other functional groups. The structures are labeled 1 through 10, corresponding to the compounds listed in the table below.

The undersigned represents that he is authorized to act on behalf of Mitsubishi Denki Kabushiki Kaisha, and certifies to the best of his knowledge and belief that title to the entire interest in the above-referenced patent application is in the name of Mitsubishi Denki Kabushiki Kaisha by virtue of an assignment filed on October 9, 1996, a copy of which is attached hereto.

February 17, 1997
Date

Name Shinichi SAITO
Title

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